## 1995 ACF Nationals Questions by U.C. Berkeley

1. Under this agreement, it was stipulated that both Great Britain and the United States would maintain naval squadrons off the African coast. In addition, seven crimes were listed for which the U.S. and Canada would extradite accused citizens of the other country. Its major terms settled territorial claims by which the United States received about seven-twelfths of an area under heavy dispute, and minor boundary rectifications were made on the northeastern border of the U.S. and Canada. For 10 points, name this treaty concluded on August 9, 1842.

Answer: Webster-Ashburton Treaty
2. This composer died of gangrene in 1687 after stubbing his toe with the point of the cane he was using to beat time at a performance. Before this unfortunate incident, however, he did leave behind an impressive musical legacy. He wrote stage music for Moliere and others, and his operas, particularly "Armide" and "Alceste," founded a French operatic tradition. For 10 points, who was this Italian-born French composer, who became Louis XIV's favorite musician?

Answer: Jean-Baptiste Lully
3. Scientists have so far failed to produce a quantitative theory of turbulence, but methods to allow study of turbulent action on large scales using smaller wind tunnel models do exist. These modelling techniques rely on the existence of a parameter that can determine methods of rescaling a system while maintaining the same level of turbulence. For 10 points, name this parameter, equal to the product of velocity and size scale divided by the kinematic viscosity, eponymous with its discoverer.

Answer: Reynolds number
4. He once quipped, "It took me fifteen years to discover that I had no talent for writing, but I couldn't give it up because by that time I was too famous." In his essays, he portrayed his life as a series of frustrations and humiliations; his works include "My Ten Years in a Quandary," "From Bed To Worse," a short film called "How to Sleep," and a 1930 sketch called "The Treasurer's Report." For 10 points, name this American critic and humorist, a member of the celebrated Algonquin Round Table.

Answer: Robert Benchley
5. On his way to India, Dionysus' drunken follower Silenus wandered into the rose gardens of the richest man in the world, a king of Phrygia. The king entertained Silenus for several days and learned the mysteries of Dionysus from him. When he finally met Dionysus, he was granted a wish by the god. For 10 points, identify this mythological king, who had to wash in the river Pactolus to rid himself of the consequences of his ill-fated wish.

Answer: King Midas
6. The first, Powell v. Alabama, reached the Supreme Court in 1932. The court reversed the convictions on the ground that failure to provide adequate council had violated the due process clause of the 14th amendment. Three years later, the second case, Norris v. Alabama, reached the Supreme Court; it reversed the convictions this time because blacks had been excluded from the grand jury that had convicted the accused youths. For 10 points, what name is given to these famous legal cases involving nine black youths sentenced to death for raping two white women on a freight train in Alabama?

Answer: Scottsboro Cases
7. Acting through its connections with the medulla oblongata of the brain stem, it helps to evoke visceral responses to the various emotional states. In doing so, it works together with other neural centers collectively called the limbic system. It also contains neural centers for hunger, thirst, and the regulation of body temperature and pituitary gland secretion. For 10 points, name this part of the brain, which has been the object of scientific studies linking it with homosexuality.

Answer: Hypothalamus
8. It is already targeted for a fictional remake to be executive produced by Spike Lee for the TNT Cable Network. Two of its creators, Steve James and Peter Gilbert, are planning this summer to make a film about the L.A. riots, which will be executive produced by Jonathan Demme. For 10 points, name this landmark 1994 film, whose only Oscar nomination came in the category for Best Editing.

Answer: Hoop Dreams
9. The son of a vintner, his last job was as deputy forester in the King's Forest in Somerset during the 1390 's. Other public service positions he held included justice of the peace in Kent and Controller of Customs on wools, skins, and hides. He was captured during the English army's invasion of France in 1359 and ransomed by King Edward III. His two trips to Italy in 1372 and 1378 were very influential, because it was there that he discovered the works of Dante, Petrarch, and Boccaccio. For 10 points, name this English poet and public servant, whose works include "Parliament of Fowls" and "Troilus and Cresyde."

Answer: Geoffrey Chaucer
10. Published in 1748, this work's section titles include "Of the Different Species of Philosophy," "Of Probability," "Of Miracles," "Of the Idea of Necessary Connexion," and "Sceptical Doubts Concerning the Operations of the Understanding." For 10 points, name this philosophical treatise which its author, David Hume, described as "an attempt to introduce the experimental method of reasoning into moral subjects."

Answer: An Enquiry Concerning Human Understanding
11. Born in 1727, he attempted to combat his government's indebtedness following the Seven Years' War through a series of reforms including the curtailing of court expenses and the abolition of forced peasant labor. His innovations, however, were steadfastly opposed by the French legislature. For 10 points, name this French minister of finance from 1774 until he was forced to resign in 1776 after he issued his Six Edicts to the Royal Council.

Answer: Jacques Turgot
12. From an early age his talent was so exceptional as to attract the attention of cardinal Scipione Borghese, nephew of Pope Paul V. While barely in his twenties, he became one of the most highly appreciated portrait sculptors of his time, his bust of Carlo Barberini being among the most famous. For 10 points, name this Italian sculptor, painter, stage designer, playwright, and architect, who, following the death of Maderno, was appointed by Urban VIII in 1629 to be the official architect of St. Peter's Basilica.

Answer: Gian Lorenzo Bernini
13. This site was originally known as Uskadama when it was part of eastern Thrace, but after being rebuilt by Hadrian in 125 AD, it was renamed. For 10 points, what is this site on the banks of the Tunca river that was the site of the treaty negotiations ending the Russo-Turkish War of 1828 and 1829, and the 378 AD defeat of the Romans under Valens at the hands of the Visigoths.

Answer: Adrianople or Edirne or Hadrianople
14. He was hampered late in his life by a chronic eye infection, but remained a prodigious, tenacious artist until his death in 1903. He was very much an outsider, being an anarchist and a French Jew living during the era of the Dreyfus affair. In addition, he was not even born or raised in France, but on the Caribbean island of St. Thomas. For 10 points, name this important French impressionist, known for his vivid landscapes and street scenes.

Answer: Camille Pissarro
15. Like Voltaire's "Candide," this work published in 1833 is a satire of German philosophy. It purports to review a work on the philosophy of clothes by Diogenes Teufelsdrockh, an eccentric professor of Things in General at Weissnichtwo (pron. VICE-NIKT-VO), which is German for "know not where." For 10 points, name this work by Thomas Carlyle, whose title is Latin for "the tailor retailored."

Answer: Sartor Resartus
16. The Dinaric Alps run along its Adriatic coast, which features good harbors, and its coastal region of Dalmatia features a white limestone plateau known as the karst. Long a province of Austria-Hungary, it became a part of Yugoslavia after World War I, and during World War II, it was run by the Nazi-sympathetic Ustashi regime. For 10 points, name this beleaguered Balkan republic, with its capital at Zagreb.

Answer: Croatia
17. In mathematics, it can describe a series whose terms are the reciprocals of an arithmetic progression, or a function whose partial derivatives satisfies LaPlace's equation. In music, it describes a vibration at a frequency which is an integer multiple of that of a fundamental vibration. For 10 points, name this word also used to describe an oscillator or a type of pendulum motion.

Answer: Harmonic
18. All common compounds of sodium, potassium, and aluminum are. Most carbonates, phosphates, silicates, and sulfides are not, except those of sodium, potassium, and ammonium. All sulfates are except those of lead, barium, strontium, and calcium. All nitrates, acetates, and chlorates are. And the greater the pressure, according to Henry's Law, the more any gas is. For 10 points, what adjective belongs at the end of each of the preceding sentences?

Answer: Soluble
19. He has two major economic principles named for him. The first states that if $80 \%$ of a nation's income will benefit only $20 \%$ of the population, the only way to improve the economic lot of the poor is to increase overall output and income levels. The second says that resources are optimally distributed when an individual cannot be moved into a better position without putting someone else into a worse position. For 10 points, name this Italian economist and sociologist who influenced Benito Mussolini.

Answer: Vilfredo Pareto
20. Born in Burma in 1870, he grew up in Scotland, and was killed by a sniper in France during World War I. Known for his witty short stories, he also wrote three plays, a book of history, and two novels, including "The Unbearable Basington." His fictional creations include the gleefully malicious characters Reginald and Clovis. For 10 points, give the pen name of this Scottish author of the short stories "Esme," "The Muse on the Hill," and "Sredni Vashtar," who was born with the name Hector Hugh Munro.

Answer: Saki (acc. Munro on early buzz)
21. The author of "On the Magnitudes and Distances of the Sun and Moon," he mistakenly believed the earth was the center of the Universe. However, he was the first to determine that the earth and the planets revolved around the sun, and he measured almost exactly the solar year and lunar month. For 10 points, who was this scientist from Samos living between 310 and 230 BC ?

Answer: Aristarchus
22. The asteroid Chiron, in an unusual orbit as far from the Sun as Saturn, was determined to be one of these when cyanogen gas was detected around it at perihelion. Another is believed to have caused the Tunguska event in Siberia in 1908, which levelled whole forests. For 10 points, name this class of objects, which includes more notable members such as West, Giacobini-Zinner, Encke, Shoemaker-Levy 9, and the most famous, Halley's.

Answer: comet(s)
23. Though known to pre-Colombian indians, this silvery-white metallic element was not recognized by Westerners until 1735. It is extensively used in wires and vessels for laboratory use, thermocouple elements, electrical contacts, corrosion-resistant apparatus, and in dentistry. Its high melting point causes it to be used in missile nose cones and high-temperature furnaces. However, its widest uses are for jewelry and as a catalyst in powdered form, including in the catalytic converters of cars. For 10 points, name this element, number 78, whose name derives from a Spanish word meaning "silver."

Answer: Platinum
24. Comprising more than 80,000 square miles, it is covered by extensive marshes along the Pripyat River in the south. Part of its boundary with Poland is formed by the Bug River, and the upper course of the Niemen flows through land that belonged to Poland until 1921. Fought over for centuries by Poland and Russia, it was subject to the Poles and Lithuanians during medieval times, and became part of the Soviet Union in 1922. For 10 points, name this now independent nation with its capital at Minsk.

Answer: Belarus
25. It is believed that one in six Americans read at least parts of it. It sold twenty million copies, and inspired a sequel, a movie, a movie sequel, a TV series, and a sequel to the TV series. Although the New York Times compared it to the works of Sherwood Anderson and Time praised it for capturing "a real sense of the temper, texture, and tensions of a small town," it was banned in Canada and many parts of the United States. For 10 points, name this novel, published in 1956, which tells of incest, suicide, abortion, drunkenness, and lots of sex in an idyllic New England town, which was written by Grace Metalious.

Answer: Peyton Place
26. Although it declined rapidly in the West, it spread throughout Persia, China, India, and the Middle East, reaching its height from the 7 th to 10 th centuries. It was condemned by the Council of Ephesus in 431 A.D., which held that Jesus had both human and divine natures but was one person. For 10 points, name this heretical Christian movement which held that Jesus Christ had two distinct natures, which was named for a Patriarch of Constantinople and not for a Greek general known for his sage advice.

## Answer: Nestorianism

27. After an adventurous early life which included arrest, jailbreak, and proprietorship of tent saloons, he settled at what later became Langtry in West Texas. He built a combination store, saloon, and pool hall, and held court as justice and coroner. For 10 points, name this US Justice of the Peace, who called himself "the only law west of the Pecos" and whose decisions were more notable for their six-gun drama than for their legal sagacity.

Answer: Judge Roy Bean
28. Born in Spain, he became the tutor of a future emperor and an important power in the government during the first years of Nero's reign. Implicated in the Pisan conspiracy to assassinate Nero, he was commanded by his former pupil to commit suicide, an order he stoically complied with. An major author in his own right, the subject matter of his plays later had a tremendous influence on Elizabethan drama. For 10 points, name this Roman author of such plays as "Hercules," "Medea," "Phaedra," "Agamemnon," and "oedipus."

Answer: Seneca (the younger)
29. The name's the same. One was the discoverer of the theorem in classical geometry that for a quadrilateral which can be inscribed in a circle, the product of the lengths of the diagonals is equal to the sum of the product of the lengths of the two pairs of opposite sides. Another was a general of Alexander the Great who founded the library at Alexandria, and whose name was common to all 15 kings of the Macedonian dynasty, which lasted until the time of Cleopatra. For 10 points, give the common name.

Answer: Ptolemy
30. The story is told by Oskar Matzerath, who is in a mental institution. He relates the tale of his life in a lively style, with an ironic view of middle-class German values and a dark comic tone often called gallows humor. Set in Danzig, this novel is usually interpreted as an allegory of German history from the early twentieth century through the rise of Hitler. For 10 points, name this 1959 book, generally considered the first important literary work published in post-WWII Germany, written by Gunter Grass.

Answer: The Tin Drum
31. Seven years after receiving his Ph.D. in physics, this man fled to America from Nazi Germany, working first at Vanderbilt University and then at CalTech on biology and genetics. He developed the plaque technique that led to purification of viruses, and studied the ability of viruses and the bacteria they infect to mutate, instrumental to the development of vaccines. FTP, name this pioneer of molecular biology who, together with Salvador Luria and Alfred Hershey, received the 1969 Nobel Prize for physiology or medicine.

Answer: Max Delbruck
32. He attempted to change Egypt from a polytheistic religion to a monotheistic one centered on a single supreme sun god Aton. He aroused the ire of the priesthood of the Amon god faction, and perhaps Amon himself, creating dissent which caused his failure. FTP, who was the pharaoh who ruled from 1379 to 1362 $B C$ ?

## Answer: Akhenaton or Amenhotep IV

33. The second major stage of photosynthesis, it involves reductive carbon dioxide fixation. These cyclic reactions do not require light and so often occur at night. The path of the carbon in the cycle was determined using Carbon Fourteen. FTP give either name for this cycle.

Answer: Calvin Cycle or Dark Reaction

## 1995 ACF Nationals Questions by U.C. Berkeley

1. The nineteenth century saw a triumvirate formed in the U.S. Senate comprised of Daniel Webster, Henry Clay, and John C. Calhoun. These three men had something in common: they all served as Secretaries of State. Answer the following about the presidents under whom they served, for the stated number of points. 1. First, for 5 points, under what president did Henry Clay serve as Secretary of State?

Answer: J.Q. Adams
2. Next, for 10 points (five each), under what two presidents did John C. Calhoun serve?

Answer: Tyler and Polk
3. Finally, for 15 points (five each), under what three presidents did Daniel Webster serve?

Answer: W.H. Harrison, Tyler, Fillmore
2. We all know that Dostoevsky wrote "Crime and Punishment." Answer the following questions about that book for the stated number of points.

1. First, for 5 points, in what Russian city does the main plot of the novel take place?

Answer: St. Petersburg
2. For 10 points, this character in the book is not really police inspector of the American kind, but a "court investigator," an impartial position created by the law reforms of 1864.

Answer: Porfiry Petrovich
3. Dostoevsky was largely inspired by a 1764 work by a Milanese called "On Crimes and Punishments," which declared that the only legitimate purpose for punishing crimes was the deterrence of other crimes. The author eloquently opposed the death penalty, which was widely used at the time. For 15 points, name the author of this socially influential work.

Answer: Cesar Beccaria
3. Identify the composers of the following ballets, for 10 points each.

1. Cinderella

Answer: Sergei Prokofiev
2. The Fantastic Toyshop Answer: Gioacchino Rossini or Ottorino Respighi
3. Daphnis and Chloe Answer: Maurice Ravel
4. Given a description, name the cataclysmic astronomical event, for ten points apiece.

1. Two white dwarfs merge, or one white dwarf exceeds the Chandrasekhar limit after its mass increases.

Answer: Type I Supernova (prompt for more specific if "supernova" is answered)
2. Hydrogen is transferred to the surface of a hot white dwarf, causing fusion to begin again. Answer: Nova
3. The core of a massive star collapses to become a neutron star, or, in some cases, a white dwarf.

Answer: Type II Supernova (again, prompt for more specific if "supernova" is answered)
5. During the time of troubles when the Rurik dynasty ended and the next dynasty began, Russia had many self-proclaimed rulers. For ten points each, identify the following:

1. Brother-in-law of Theodore I, he was a leading noble who ruled Russia from 1598-1605. His short reign was the subject of an opera by Mussorgsky.

Answer: Boris Godunov
2. This son of Ivan the Terrible died in childhood, but at least three pretenders assumed his identity and made bids to be tsar.

Answer: Dmitri or Demetrius
3. In 1613, this distant relative of Ivan the Terrible was selected to become the next tsar and founded a new dynasty. For five points each, give his first and last name.

Answer: Michael Romanov
6. Identify the following photographers for ten points each:

1. He and James Agee collaborated on "Let Us Now Praise Famous Men."

Answer: Walker Evans
2. The father of modern photography, he married the mother of modern New Mexican art, Georgia O'Keeffe.

Answer: Alfred Stieglitz
3. A photographer and artist associated with the surrealists, he was born in Philadelphia. He invented the Rayograph process of cameraless photography and is known for Parisian Haute-Made photographs?

Answer: Man Ray
7. For ACF Regionals, we wrote a bonus on people who were burned at the stake. This bonus is a little tamer, but the subject is similar. For the stated number of points identify each of these headless people: 1. 5 pts: This wife of Henry VIII was beheaded in 1536 by a special swordsman brought in from the continent.

Answer: Anne Boleyn
2. 5 pts: French noble who spent his life experimenting in the sciences, especially chemistry. He was an unfortunate victim of the French Revolution.

Answer: Antoine Lavoisier
3. 10 pts: This Roman statesman was caught while trying to flee Italy in 43 BC by agents of Mark Antony. When he realized all was lost, he bared his neck for the blow.

Answer: Marcus Tullius Cicero
4. 10 pts: This king was separated form his shoulders in 1649 after a national uprising lost him his throne.

Answer: Charles I
8. Given a pair of places, name the river which forms a political border between the two for 10 points each.

1. California and Arizona Answer: Colorado River
2. Georgia and Alabama Answer: Chattahoochee
3. South Africa and Botswana Answer: Limpopo River
4. It's Beavis and Butthead time. No, you don't have to know anything about the show - that would be a trash question. Instead, we want you to identify the following Thomas Hardy novels from clues that could have been provided by the lovable MTV duo. You will receive 10 points for each correct answer, or zero if you totally suck.
5. Some chick is forced by this totally evil dude to have sex, so she like kills him and stuff, but gets hanged for it.

Answer: Tess Of The d'Urbervilles
2. Some moron sells his wife and baby to some sailor dude because he's like drunk off his ass all the time.

Answer: The Mayor Of Casterbridge
3. Some chick has like three guys who totally want her and she marries all of them, but her first husband like dumps her and then gets knocked off by the second one. The title is taken from some poem about death and stuff.

Answer: Far From The Madding Crowd
10. Answer the following questions about the digestive system, for 10 points each.

1. The name for the upper part of the small intestine.
2. The valve between the stomach and the duodenum.
3. The organ that pours digestive juices into the duodenum.

Answer: Duodenum
Answer: Pyloric valve
Answer: Pancreas
11. Identify the following Jane Austen works from prominent characters, for 10 points each.

1. Henry Tinley, Catherine Morland
2. Thomas Bertram, Fanny Price
3. Robert Martin, Mr. Knightly, and Frank Churchill

Answer: Northanger Abbey
Answer: Mansfield Park
Answer: Emma
12. Identify these figures from the New Deal days for ten points each:

1. This Roman Catholic priest, though Canadian born, sermonized from his church in Michigan on a weekly basis on the radio, criticizing communists, Jews, and Wall Street. At first he supported the New Deal, but he came to hate FDR and opposed US entry into WW II.

Answer: Father Charles Edward Coughlin
2. This government administrator was a confidant of FDR and served as Secretary of Interior from 19331946.

Answer: Harold Ickes
3. This Louisiana politician helped get his brother elected governor and Senator to earn the governorship for himself. He got to the state White House upon the retirement of Gov. Richard Leche, but was defeated in 1940. Later he won back the governorship.

Answer: Earl Long
13. Identify the following terms from quantitative and qualitative chemistry for 10 pts. each. 1. The process of finding the amount of a substance in a solution by adding to it precise amounts of a reagent.

Answer: Titration
2. A glass tube for transferring a precise volume of a liquid.

Answer: Pipette
3. The worthless remains left after chemical analysis literally "dead head."

Answer: Caput Mortuum
14. This bonus will test your knowledge on the hero Heracles. Answer the following for the stated number of points:

1. (5 pts) What goddess drove Heracles to madness so that he slew his first wife and children in a fit of insanity?

Answer: Hera
2. (5 pts) What king of Argos did Heracles have to serve in twelve labors?

Answer: Eurystheus
3. (10 pts) What was Heracles' mother's name?

Answer: Alcmene or Alcmena
4. (10 pts) What last wife of Heracles unwittingly poisoned him with blood from the centaur Nessus -whom Heracles slew with a poisoned arrow?

Answer: Deineira
15. 30-20-10. Name this religious organization:

1. Their order was approved September 27, 1540 by Pope Paul III.
2. To secure maximum flexibility for foreign or domestic missions, their structure is highly centralized.

They are led by a "Superior General," who is required to enter into free dialogue with the other members.
3. The first Superior General was Ignatius of Loyola.

Answer: Jesuits or Society of Jesus
16. Give the directors of the following films, for 5 points each. Hint: all of the directors have a variant of the same first name.

1. "Ready to Wear" Answer: Robert Altman
2. "Nobody's Fool" Answer: Robert Benton
3. "Five Easy Pieces" Answer: Bob Rafelson
4. "All that Jazz" Answer: Bob Fosse
5. "Star Trek - The Motion Picture" Answer: Robert Wise
6. "This is Spinal Tap" Answer: Rob Reiner
7. Identify the author from works, 30-20-10.
8. "A Journal of a Voyage to Lisbon"
9. A play, "Tom Thumb," and a satire, "Jonathan Wild"
10. The novels "Amelia" and "Apology for the Life of Mrs. Shamela Andrews"

Answer: Henry Fielding
18. Identify these national capitals for 10 points each.

1. Planned by Lucio Costa, Oscar Niemeyer designed most of the buildings. Name this planned capital city of the 1950's which was shaped like an airplane.

Answer: Brasilia. Brazil
2. It was planned in 1912 by Edwin Lutyens and a planning commission.

Answer: New Delhi, India
3. Walter Burley Griffen submitted the winning design in the 1911 competition to design this capital.

Answer: Canberra, Australia
19. Identify the species of man given a common name of an Anthropological find, five each, five for all five correct:

1. Peking Man Answer: Homo erectus
2. Cro-Magnon Man

Answer: Homo sapiens
3. The Taung Child

Answer: Australopithecus africanus
20. Identify the following 19th and 20th century astronomers for 10 points each.

1. He first described the Milky Way's spiral shape.

Answer: Harlow Shapley
2. He predicted the discovery of the planet later named Pluto.

Answer: Percival Lowell
3. He was the first to popularize the theory that Stonehenge was an ancient astronomical observatory. Answer: Gerard Stanley Hawkins
21. Identify the treaties which ended the following wars, for 5 points each:

1. War of Austrian Succession

Answer: Aix-la-Chapelle
2. Thirty Years' War

Answer: Westphalia
3. Great Northern War

Answer: Nystadt
4. Russo-Japanese War

Answer: Portsmouth
5. War of the League of Augsburg

Answer: Ryswick
6. First War of Devolution, 1668

Answer: Aix-la-Chapelle
22. To make everything harder to remember, many dynasties use the same names. In this bonus, you will be given the names of three kings named Charles and the country they reigned. For ten points each, you name their dynasty, five points if you need a further hint of the reign dates.
10: Charles II of Spain
5: (reigned 1665-1700)
10: Charles VI of Austria
5: (reigned 1711-1740)
Answer: Hapsburg
Answer: Hapsburg
10: Carl XV of Sweden
5: (reigned 1859-1872)

## Answer: Bernadotte

23. In the Roman calendar, the Ides always fall eight days after the nones. Answer the following questions about when the Ides fall.
24. For five points each, in which four months is this the 15th?

Answer: March, May, July and October
2. For an additional ten points, on what day do the Ides fall in the other eight months?

Answer: 13th
24. The Maginot was not the only Line in Europe. Identify these European defenses, for 10 points each:

1. Designed to dupe the French and opposite the Maginot line, what was the German defense line called?

Answer: Siegfried Line
2. What was the World War I German plan for fighting a two front war including the invasion of Belgium and Holland, then France?

Answer: Schlieffen plan
3. A last ditch French effort at stopping the Germans was another defense line. Name it.

Answer: Weygland Line
25. In Hispano-America several terms have been used to denote an individual's racial origin. For ten points each, what term:

1. Applies to persons of pure European descent born in Latin America?
2. Applies to those of mixed blood, Indian and European?
3. Applies to those of Spanish birth living in Latin America?

Answer: Creole
Answer: Mestizo
Answer: Peninsulares
26. Lots of mathematical functions aren't given very fancy names.

In fact, many important functions are just named with Greek letters. Identify the following unimaginatively named functions for 15 points each.

1. This number-theoretic function gives the number of positive integers less than $x$ which are relatively prime to x . It was discovered by a Swiss mathematician.

Answer: Euler phi function
2. Finally, this function is used by analytic number theorists to study the distribution of prime numbers. The famous unproven Riemann Hypothesis states that its complex zeros all have real part one-half.

Answer: Riemann zeta function

